Multiple brain and pulmonary abscesses due to *Streptomyces spp.* in a patient with silicosis

M. S. Mameli, F. Melis, N. Geremia, F. Atzeni, E. M. Porqueddu, S. Babudieri, G. Madeddu

Department of Medical, Surgical and Experimental Medicine, Unit of Infectious Diseases, University of Sassari, Sassari, Italy

**ABSTRACT:** Invasive Streptomyces infections are rarely described in the scientific literature, thus we report a case of multiple brain and pulmonary abscesses in a silicosis affected young man successfully treated with intravenous antibiotic therapy.

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**Keywords:** Brain and lung abscess, Streptomyces, Pneumoconiosis; antibiotic treatment.

INTRODUCTION

Streptomyces are Gram-positive saprophytic soil bacteria rarely known as cause of invasive infections; malignancy, AIDS/HIV, central catheter, and prosthetic valve are the major risk factors. Among cases reported in the literature we found bloodstream infections, pneumonia, and central nervous system infections.

CASE REPORT

A 45 years old man, previous miner and with a history of alcoholism was admitted to a Respiratory Diseases Unit in October 2017 due to a respiratory failure. The chest X-ray revealed a right basal lung consolidation. A bronchoscopy was performed and Actinomyces colonies were identified in cultural test of broncho-alveolar lavage. The histologic examination revealed a silicosis like pattern: small hyaline nodular areas made of cellular debris and small crystals surrounded by histiocytes, plasma cells and lymphocytes were described. The Ziehl-Neelsen stain excluded the hypothesis of an infection sustained by Mycobacteria. Although oral amoxicillin/clavulanate (1 g every 12 hours) therapy was started, the patient didn’t present to the following medical examinations. Six months later the patient came to the Emergency Room of a peripheral hospital because of stupor. His relatives told the physicians that he referred fever and headache since few days, later he was found in a mental confusion state. The lumbar puncture results of a high level of proteins and neutrophilic lymphocytes. The cranial computed tomography (CT) revealed the presence of multiple, small, round-shaped lesions compatible with micro-abscesses. The chest X-ray showed disseminated nodular lesions and a parenchimal consolidation in mid-lower fields of both lungs. After few hours of observation the patient was sent to our ward of Infectious Diseases for further investigations. On arrival GCS score was 10. On physical examination, no rigor nucalis nor focal neurological signs but only fine tremors involving the right arm were observed. The lung examination revealed decreased breath sounds, rhonchi and crackles on chest auscultation. He also presented a deep scar in the forehead due to a work-related injury. Blood test results showed an increase of CRP (15.6 mg/dL) and neutrophilic leucocytes. Intravenous (iv) meropenem (2 g every 8 hours, iv) plus iv levofloxacine (500 mg every 12 hours) and dexametasone (36 mg/day, iv) were started. After 48 hours there was no clinical improvement and a neurological consultation was performed. The patient was unresponsive to verbal stimulation, with a prominent rigidity to upper and lower limbs. Positive Babinski sign was present to both sides. A brain MRI showed the presence of multiple target-shaped lesions surrounded by thin edema, disseminated in both supratentorial and infratentorial territories (Figure 1).
A few cases of Streptomyces brain abscesses are described in the literature. This is the first case of lung and brain involvement, as far as we know. Published susceptibility data indicate full activity of amikacin and linezolid against these pathogens; carbapenems, tetracyclines, and macrolides may also have utility. While sulfonamide are traditionally used for treating Nocardia species infection, only 35% of Streptomyces isolates are susceptible to trimethoprim-sulphametoxazole (TMP-SMX). In our case the antibiotic therapy was decided according to antibiotic susceptibility tests and considering both brain and lungs clinical involving. Unfortunately, it was not possible to perform a brain stereotaxic biopsy, which is considered the gold standard in brain abscesses diagnosis.

CONCLUSIONS
Clinical and laboratory response were successful despite the persistence of few small lesions. Although invasive streptomyces infections are rarely observed, they must be ruled out in the differential diagnosis of lung and brain abscesses.

CONFLICT OF INTEREST:
The Authors declare that they have no conflict of interests.

REFERENCES
Brain and lung abscess, Streptomyces, Pneumoconiosis; antibiotic treatment.


